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ABSTRACT

An in-depth analysis was made of how quickly most people move up the wage scale from minimum wage, what factors influence their progress, and how minimum wage increases affect wage growth above the minimum. Very few workers remain at the minimum wage over the long run, according to this study of data drawn from the 1977-78 May Current Population Survey (CPS) and the 240 monthly CPS Outgoing Group Files from January 1979 to December 1998. Of the youngest, most inexperienced workers, 12 percent earn the minimum wage, but less than 1 percent earn the minimum at ages 46-55. The percentage of those earning the minimum wage also declines as workers achieve higher levels of education. The study also found that over the last 20 years, nearly two-thirds of minimum wage workers moved above the minimum wage within one year of working at the minimum wage. The median annual wage growth for minimum wage workers was 10 percent between 1977 and 1997. Labor market factors also affect wage growth; for example, higher unemployment rates are associated with lower wage growth among minimum wage workers and increases in median wages among high school graduates increases the probability of exiting minimum wage by 2 percent. The industry in which employees are employed also has some effect on rate of exiting minimum wage. Cashiers seem to be the most likely to move beyond the minimum wage. In addition, persons with more access to training tend to rise above the minimum wage more quickly. Finally, an increase in the minimum wage is accompanied by a sharp reduction in workers rising above the minimum wage, and substantial drops in wage growth are measured in the second year following a minimum wage hike. (Contains 14 references and nine tables.) (KC)

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January 2000

Rising Above the Minimum Wage

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William Even *of* Miami University of Ohio
David Macpherson *of* Florida State University

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The Employment Policies Institute is a nonprofit research organization dedicated to studying public policy issues surrounding employment growth. In particular, EPI research focuses on issues that affect entry-level employment. Among other issues, EPI research has quantified the impact of new labor costs on job creation, explored the connection between entry-level employment and welfare reform, and analyzed the demographic distribution of mandated benefits. EPI sponsors nonpartisan research which is conducted by independent economists at major universities around the country.

Dr. William E. Even is Professor of Economics at Miami University and Associate Director of the Center for Pension and Retirement Research. His interests include pensions, minimum wage, employee benefits, and labor unions.

Dr. Even has authored several articles appearing in leading national economic journals including *Applied Economics, Journal of Labor Economics,* and the *American Economic Review.* His work includes book publications in *Women and Work,* and co-authored work in *Pension Coverage Issues for the '90s.* He completed his Ph.D. in Economics from the University of Iowa in 1984.

Dr. David Macpherson is Professor of Economics and Research Director of the Pepper Institute on Aging and Public Policy at the Florida State University. His specialty is labor economics. His current research interests include pensions, discrimination, industry deregulation, labor unions, and the minimum wage.

Dr. Macpherson's research has appeared in the nation's most respected economics and industrial relations journals, including the *Journal of Labor Economics, Industrial and Labor Relations Review,* and the *Journal of Human Resources.* He is a co-author of the undergraduate labor economics text *Contemporary Labor Economics* as well as the forthcoming book *Pensions and Productivity.* He received his Ph.D. from Pennsylvania State University in 1987.

Rising Above the Minimum Wage

Executive Summary

Proponents of a higher minimum wage often imply that entry-level employees go years without a wage increase. Common sense suggests otherwise: the vast majority of those who start at the minimum wage do not remain there for long. In this report, William Even of Miami University, Ohio and David Macpherson of Florida State University provide a valuable in-depth analysis of how quickly most people move up the wage scale, what factors influence their progress, and how minimum wage increases affect wage growth above the minimum.

This study is an important tool for policy makers interested in assisting those who earn low wages. By providing a thorough and accurate profile of minimum wage employees and their wage growth, Drs. Even and Macpherson give policy makers essential information they can use to decide whether proposed wage policies are necessary, effective, or appropriately targeted.

Climbing the Wage Scale

Very few workers remain at the minimum wage over the long run. Of the youngest most inexperienced workers, age 16-18, 11.6% earn the minimum wage. As workers age, however, much lower percentages are found at the minimum — a low of 0.7% earn the minimum at age 46-55. The percentage of those earning the minimum wage also declines as workers achieve higher levels of education. For those who have not finished high school, 6.2% earn the minimum wage. Only 1.5% of those who finish high school have the same level of pay. As expected, age and experience reduce the share of those earning the minimum wage regardless of educational level. Only 0.6% of high school graduates, for instance, earn the minimum wage between the ages of 46 and 55. (The percentages tend to rise as workers enter

Profile of Total Work Force at Minimum Wage — Breakdown by Age & Educational Attainment

Age	
16-18	11.57%
19-21	4.29%
22-25	2.12%
26-35	1.05%
36-45	0.74%
46-55	0.66%
56-64	0.95%
65-99	2.68%
All	1.75%
Education	
Less than High School	6.23%
High School Graduate	1.49%
Some College	1.15%
College Graduate	0.22%
Graduate Degree	0.07%

retirement years, likely reflecting changing work incentives.)

Drawing on extensive data covering two decades of observations, Drs. Even and Macpherson isolate numerous facts that form a compelling overview of what happens when people take minimum wage jobs.

Share of Minimum Wage Workers Whose Earnings Rise Above the Minimum Wage Within One Year by Age and Educational Attainment

Age	
16-18	61.78%
19-21	67.80%
22-25	68.98%
26-35	64.63%
36-45	62.11%
46-55	58.78%
56-64	51.46%
65-99	41.24%
Education	
Less than High School	56.82%
High School Graduate	64.67%
Some College	67.63%
College Graduate	71.33%
Graduate Degree	72.73%

- Between 1977 and 1997, the average first year "exit rate"* of those who worked at the minimum wage was 65.2% — which means nearly two-thirds of minimum wage workers moved above the minimum wage within one year of working at the minimum wage.

- The first-year exit rate is significantly higher for full-time workers (67%) than for part-time employees, whose exit rates range from 55% for those with the lightest work schedules to 61% for those working 30-34 hours per week.

- The median annual wage growth for minimum wage workers was 10.1% between 1977 and 1997. For full-time minimum wage workers, median wage growth in the first year is higher — 13.8%. For all workers in the economy, annual wage growth typically measures 2%-5%, much lower than median wage growth at the entry level.

- Minimum wage workers with more education are more likely to move up the wage ladder than those who are less educated. Workers with less than a high school education see wage gains of 8.06% in the first year, while high school graduates weigh in at 11.76% and those with some college education see wage gains of 14.47%. College graduates see gains of 20% or more within one year of working at the minimum wage.

- Younger workers are more likely to exit the minimum wage within a year than are older workers. In all age groups below age 46, exit rates top 60%, which means the vast majority rise above the minimum wage quickly. For the relatively few minimum wage workers who are over age 45, exit rates decline from 59% to a low of 41% in the over-65 demographic.

**The exit rate is defined as the percentage of minimum wage workers that have sufficient wage growth to earn above the minimum wage one year later. If the minimum wage increases over the year, a person's wage must increase beyond the level of the new minimum to be counted as an exit.*

Drs. Even and Macpherson also provide data on those who do not "exit" the minimum wage in the first year. Compared to those who climb the wage scale, those who get "stuck" in the first year are more likely to be working part-time, to have lower education levels, and to be older. Women and African-American workers are somewhat less likely to rise from the minimum wage in the first year, although their exit rates still measure 59.34% and 57.51%, respectively.

Labor Market Factors Affecting Wage Growth

This paper is unique in that the authors go far beyond a simple profile of one segment of the work force. The authors conduct a comprehensive examination of the factors that affect growth from the minimum wage. Among their findings:

- Higher unemployment rates are associated with lower wage growth among minimum wage workers. Every one-percentage-point increase in the unemployment rate of "prime-age" workers (age 25-61) reduces wage growth of minimum wage workers by 0.21%. Alternatively, a lower unemployment rate would be associated with higher wage growth. Because the authors' conclusions are drawn from state-level data, one can assume that wage growth varies by region just as labor market conditions vary.

- As measures of median wages among high school graduates rise, exit rates and wage growth among minimum wage workers accelerate. A 10% rise in the median wage of high school graduates increases the probability of exiting minimum wage by 2.0%, while wage growth increases more than half-a-percentage point. One could conclude that policies aimed at boosting wages of high school graduates (most of whom make much more than minimum wage) would have a positive effect on wage growth at the entry level.

- The industry of employment has some effect on exit rates. Compared to food service (a large employer of minimum wage earners), entry-level workers are somewhat less likely to rise above the minimum wage if they work in colleges or universities, but somewhat more

Median Percentage Wage Growth for Minimum Wage Workers Within the 1st Year by Age and Educational Attainment

Age	
16-18	8.62%
19-21	12.07%
22-25	15.82%
26-35	11.94%
36-45	11.59%
46-55	8.96%
56-64	8.06%
65-99	5.88%
Education	
Less than High School	8.06%
High School Graduate	11.76%
Some College	14.47%
College Graduate	20.32%
Graduate Degree	24.53%

likely to move up if they are employed in a department store. Among occupations, cashiers (the most common minimum wage job) appear to be the most likely to move up the wage scale.

Share of Minimum Wage Workers Whose Earnings Rise Above the Minimum in the 1st Year by Hours Worked

1-9 hrs	54.67%
10-19 hrs	58.26%
20-29 hrs	61.11%
30-34 hrs	60.98%
35+ hrs	67.34%

Median Percentage Wage Growth for Minimum Wage Workers Within the 1st Year by Hours Worked

1-9 hrs	6.90%
10-19 hrs	8.06%
20-29 hrs	8.96%
30-34 hrs	9.43%
35+ hrs	13.79%

The authors measure the potential effect of access to training, whether inside or outside the firm, on wage growth above the minimum. Not surprisingly, those with access to training (and, therefore, to improved skills) tend to rise above the minimum wage more quickly. But a minimum wage hike undermines this effect. The authors find that a 20% increase in the minimum wage "eliminates any advantage of a minimum wage worker being in a high training occupation." In short, an artificial hike in the minimum wage reduces the effects of a "natural" upward force on wages at the entry level.

Effects of Higher Mandated Wages

Finally, Drs. Even and Macpherson measure the impact of mandated increases in the entry-level wage on exit rates of minimum wage workers. They find sharp reductions in exit rates in the years surrounding a mandated wage increase. More importantly, they measure substantial drops in wage growth in the second year following a mandated wage hike. An increase in the minimum wage causes a compression in wage growth. In the case of a 10% increase in the minimum wage, median wage growth increases 7.9% the first year, while those at the 90th percentile see only a 6.4% increase. The following year, however, wage gains slow by 0.9% at the median for minimum wage workers, with a 5.3% decrease in growth for those at the upper end.

Conclusion

The research presented here is the most complete analysis currently available of wage growth among entry-level employees. Clearly, most workers who start at the minimum wage build skills and move up quickly, especially when labor markets are tight. This report quantifies this progress from numerous angles, providing policy makers with a new level of information on wage growth and the factors influencing it.

Thomas K. Dilworth
Research Director

Rising Above the Minimum Wage

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Rising Above the Minimum Wage

1. Introduction

Proponents of a higher minimum wage generally argue that it will improve the standard of living for low-income workers. Opponents point to potential employment losses, the fact that many minimum wage workers are teenagers who are not in poverty, and the possible negative effect on job training.[1]

[W]age growth among the average minimum wage workers is substantial and a majority (60-70 percent) rise above the minimum wage within a year.

In evaluating the anti-poverty aspects of a minimum wage hike, it is important to know the permanency of minimum wage employment. If minimum wage workers quickly receive wage increases raising them beyond the minimum, an increase in the minimum wage will have little effect on long-term poverty. Furthermore, if a higher minimum wage has negative employment effects, a more appropriate anti-poverty policy may be to focus on stimulating the wage growth of minimum wage workers.

Several earlier studies have examined the wage growth of minimum wage workers but used data from the early 1980s.[2] Long (1999) uses the most current data (the 1992 and 1993 Survey of Income and Program Participation panels). Several conclusions can be drawn from the earlier work in the area. First, wage growth among the average minimum wage workers is substantial and a majority (60-70 percent) rise above the minimum wage within a year. Second, among minimum wage workers, wage growth was highest among the most educated, the young, full-time workers and men.

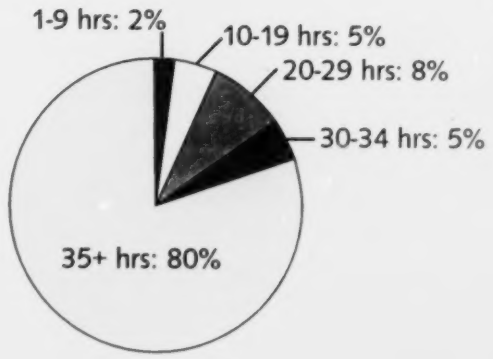
Our work adds to the existing knowledge in a few ways: first, it employs a data set of minimum wage workers that spans the years 1978 through 1998. The greater number of years and larger sample size allow us to estimate the effect of changes in state or federal minimum wage policies on the wage growth of minimum wage workers. Second, with this data set, we are able to discern the effect of labor market conditions on wage growth. For example, we are able to examine how the growth of wage inequality that occurred in the 1980s affected the wage growth of minimum wage workers. Our results suggest that as wage inequality rose, the wage growth of minimum wage workers increased as well. Third, we employ quantile regression methods to examine how minimum wage laws and other labor market conditions affect the distribution of wage growth. We find that a tighter labor market tends to increase the dispersion of wage growth. Finally, we provide evidence consistent with the notion that increases in the minimum wage reduce access to job training and subsequent wage growth.

The paper is organized as follows: Section 2 describes the data used in our analysis and descriptive sample statistics follow in Section 3. Sections 4 and 5 summarize how exit rates from minimum wage employment rates and median wage growth vary with worker and job characteristics. Factors influencing the distribution of wage growth are discussed in Section 6, and Section 7 investigates the interaction between minimum wages, job training and wage growth.

2. Data

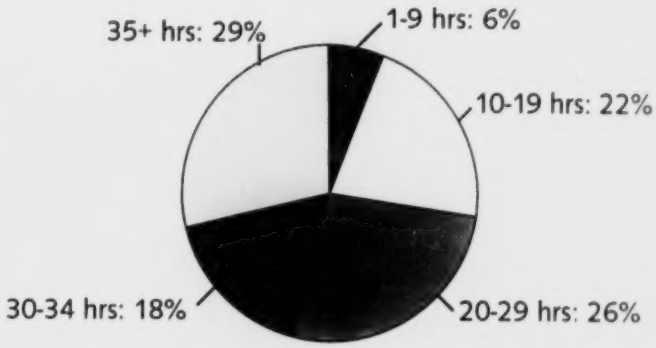
The data for this study is drawn from the 1977-78 May Current Population Survey (CPS) and the 240 monthly CPS Outgoing Rotation Group files from January 1979 to December 1998. The CPS is structured so that a given household is sampled 4 consecutive months, not interviewed for 8 months, and then interviewed for another 4 consecutive months. When the household leaves the sample at the end of the first or last four-month period of interviews, it is part of an outgoing rotation group (ORG). The matched ORG files provide information on a person at the beginning and ending of a one-year period.[3] Given that our sample spans 1977 through 1998, there are 20 two-year panel data sets.

Profile of Weekly Hours Worked for All Workers 1994-1997



Our minimum wage sample includes wage and salary workers earning exactly the minimum wage in the first year of the two-year panel.[4] The minimum wage is defined as the greater of the federal or state minimum wage and was computed for each month over the sample period. The wage rate is defined as the reported hourly wage for workers paid by the hour, and the usual weekly earnings divided by usual weekly hours for anyone not paid by the hour. Workers that are paid less than the minimum wage in the first year of the panels are not included in the minimum wage sample since they may be exempt from coverage or may receive pay above and beyond the hourly wage rate (e.g., tips or commissions).[5] The sample excludes anyone that is not a wage and salary worker in the second year.

Profile of Weekly Hours Worked for Minimum Wage Workers 1994-1997



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3. Sample Means

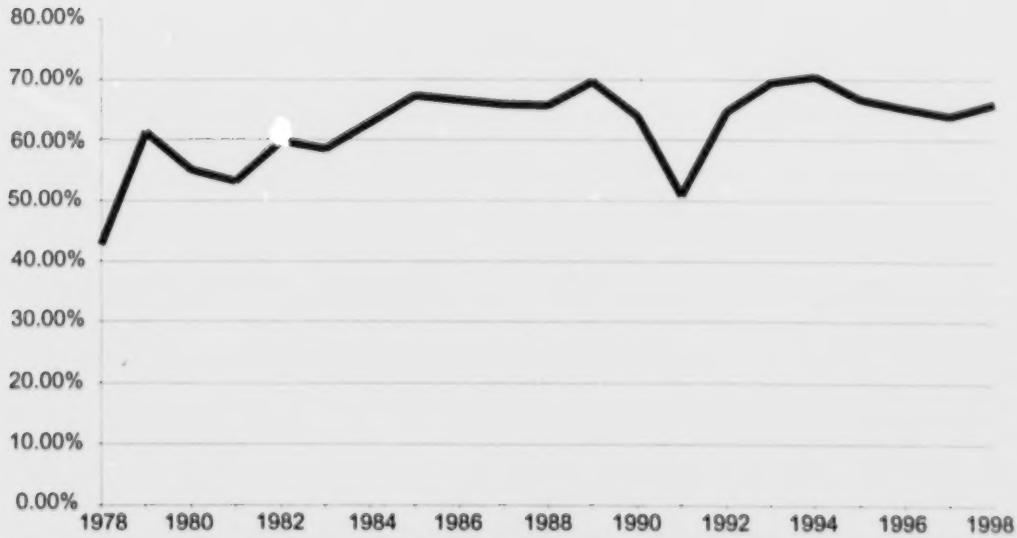
In Table 1, sample means are presented for three groups: (1) minimum wage workers from 1977-1997; (2) minimum wage workers from 1994-97; and (3) all wage and salary workers from 1994-1997. The respective sample sizes are 24,733; 1,812; and 648,254.

A comparison of means for minimum wage workers and all workers for the 1994-97 period reveals that, compared to the work force as a whole, minimum wage workers are more likely to be less than 25 years of age, female, never married, black and are less educated. In terms of their jobs, minimum wage workers are more likely than the average worker to be in part-time jobs and in occupations where relatively little job training is provided.[6]

Over the 1994-97 sample period, eating and drinking places employed 5.3 percent of all workers, but 21.0 percent of minimum wage workers. Cashiers represented 8.9 percent of all minimum wage workers, but only 2.5 percent of all workers.

The 15 industries and occupations that employ the most minimum wage workers are listed as "detailed" industries and occupations in Table 1. Comparing the fraction of minimum wage workers with the fraction of all workers reveals whether minimum wage workers are more or less likely than the average worker to be employed in a given industry or occupation. For example, minimum wage workers are more likely than average to be employed in eating and drinking places or as cashiers. Over the 1994-97 sample period, eating and drinking places employed 5.3 percent of all workers, but 21.0 percent of minimum wage workers. Cashiers represented 8.9 percent of all minimum wage workers, but only 2.5 percent of all workers.

Time Line of Exit Rates* from 1977-1997



* The "exit rate" is defined as the percentage of minimum wage workers that have sufficient wage growth to earn above the minimum wage one year later. If the minimum wage increases over the year, a person's wage must increase beyond the level of the new minimum to be counted as an exit.

Several additional variables designed to capture the influence of statewide labor market conditions were merged to the minimum wage sample. These variables include the adult unemployment rate, the employment to population ratio, teenagers as a percentage of the adult population and measures of wages for high school graduates. The method for computing these variables is described in the data appendix and the means are presented at the end of Table 1.

The sample means reveal that the average annual increase in the minimum wage over the period was 8.3 percent.[7] This figure is nearly two times the average annual increase of 4.3 percent in the median wage for high school graduates.

Since there is substantial wage growth for the typical minimum wage worker, the percentage of workers earning the minimum wage should diminish as they acquire additional labor market experience. [Evidence in support of this hypothesis is presented in Table 2 which presents the percentage of workers earning the minimum wage by age group and education.] The statistics, based on the 1998 Current Population Survey Outgoing Rotation Groups, reveal a sharp decrease in the percentage of workers earning the minimum as workers age. For example, the percentage of workers earning the minimum wage is 11.6 percent among 16-18-year-olds, but only 1.1 percent among 26-35-year-olds.The percent earning the minimum continues to drop until the 46-55-year-old age group. Beyond that age, the percent earning the minimum begins to rise again. This may reflect a tendency for older workers who have gone into partial retirement to accept minimum wage employment.

The fraction of workers earning the minimum wage also drops with educational attainment. Among workers with less than 12 years of education, 6.2 percent earn the minimum wage. This drops sharply to 1.5 percent among workers with exactly 12 years of education, and continues to fall further to 0.1 percent among workers with more than 16 years of education.

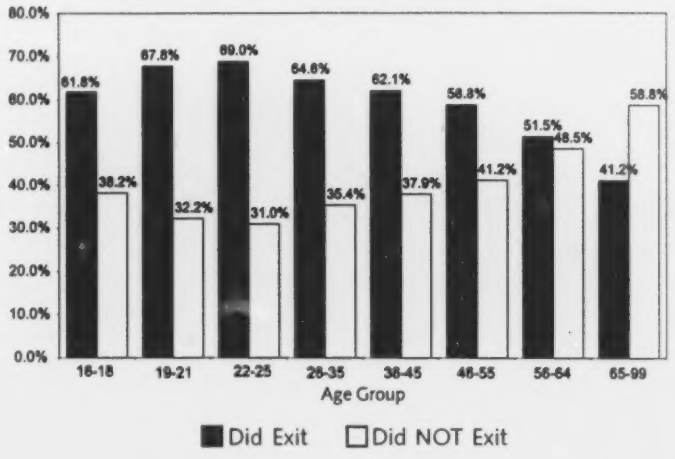
Stratification by both education and age reveals that within each education group the percentage of workers earning the minimum wage drops quickly with age. It is also clear that minimum wage employment is much more likely to persist over time for workers with less education. For workers with less than 12 years of education, the percentage earning the minimum wage drops from 12.9 percent among 16-18-year-olds to 3.2 percent among 46-55-year-olds. For workers with a high school degree, the corresponding statistics are 8.7 and 0.6 percent.

4. Exit Rates From Minimum Wage Employment

The above evidence suggests that as minimum wage workers age or acquire additional education, a large fraction of them will experience earnings growth sufficient to push them above the minimum wage. The chance of a successful exit from minimum wage employment is, however, much lower among less educated workers. In this section, we provide a more in-depth analysis of the factors which determine the rate at which workers exit minimum wage employment. We define the "exit

rate" as the percentage of minimum wage workers that have sufficient wage growth to earn above the minimum wage one year later. If the minimum wage increases over the year, a person's wage must increase beyond the level of the new minimum to be counted as an exit.[8]

Profile of One Year Exit Rates for Minimum Wage Workers by Age 1977-1997

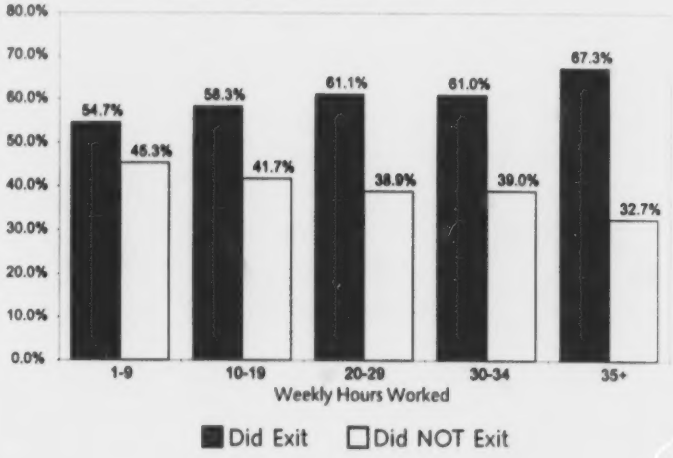


The average exit rate, weighted by sample size, over the entire period is 65.2 percent. Hence, among workers earning the minimum wage in a given year, approximately two-thirds are earning more than the minimum wage one year later. Thus, for the majority of workers, minimum wage employment is a short-lived phenomenon.

Table 3 provides a breakdown of exit rates for several stratifications of the sample. The results reveal that exit rates are lowest for the oldest workers. The exit rate is 62 percent for 16-18-year-olds and peaks at 69 percent for 22-25-year- olds. For successively older age groups, the exit rate drops and reaches a low of 41 percent for workers aged 65 and over. Hence, if a worker has not acquired sufficient skills to earn more than the minimum wage, the likelihood of acquiring such skills falls as a person ages beyond their mid-twenties.

Evidence also suggests that men are more likely to exit minimum wage jobs than women, and whites are slightly more likely than blacks to exit. Moreover, consistent with the notion that on-the-job training and experience enhance wage growth, workers who work more hours per week or who are employed in occupations with higher levels of training have higher exit rates.

Profile of One Year Exit Rates for Minimum Wage Workers by Hours Worked 1977-1997



As an alternative way to present the exit rate data, Table 4 presents the means of several variables by exit status. Consistent with the earlier results, those with a lower exit rate tend to be older, less educated, female and minorities.

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Profile of One Year Exit Rates for Minimum Wage Workers by Educational Attainment 1977-1997

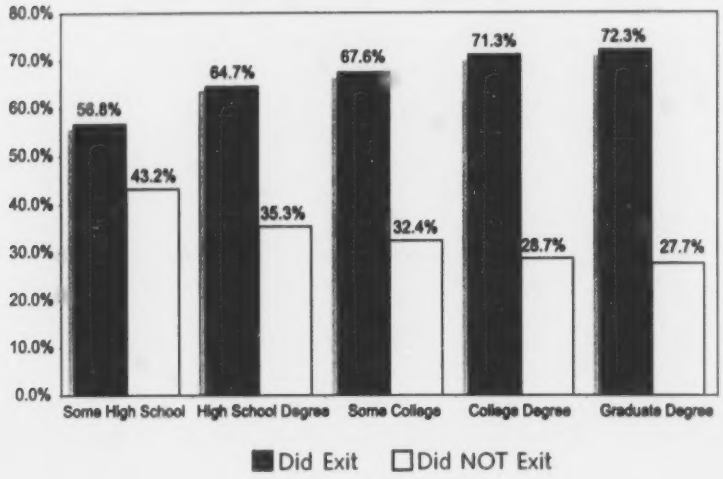

Table 5 provides the results of a probit model predicting the probability of a minimum wage exit. The coefficients represent the effect of a one-unit change in the relevant explanatory variable on the probability of an exit. These "marginal probability effects" (MPEs) are evaluated for a worker with characteristics equal to the sample mean.

In addition to the characteristics used to stratify the sample in Table 3, several additional variables are used in the analysis. First, controls intended to reflect the labor market conditions in the worker's state are introduced. This includes state-level measures of the annual unemployment rate for 25-61-year-olds; teenagers as a percentage of the age 16-61 population; and the employment to population ratio of 25-61-year-olds. The expectation is that a tighter labor market (as evidenced by a low unemployment rate or a high employment-population ratio) would lead to greater wage increases. Also, a larger percentage of teenagers as a percentage of the adult population would imply greater availability of low-skill workers for minimum wage work and lower wage growth among the minimum wage work force.

We also include controls for wage levels within the state. For each state and year, we compute the median and 25th percentile of wages for high school graduates aged 25-34. We then include the ratio of the median to 25th percentile of wages and the ratio of the 25th percentile to the minimum wage. With a higher ratio of the 25th percentile to the minimum wage, the less "binding" the minimum wage will be and the greater will be wage growth since training is less likely to be reduced.

We also add the ratio of the 50th to the 25th to capture the impact of changes in the return to skill or experience. It is well established that during the 1980s, earnings inequality increased partly in response to an increase in the returns to skill.[9] To the extent that adding a year of experience increases skill, the greater the ratio of the 50th to the 25th, the higher the expected wage growth.

[I]f a worker has not acquired sufficient skills to earn more than the minimum wage, the likelihood of acquiring such skills falls as a person ages beyond their mid-twenties.

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Finally, we include the state-specific annual percentage increase in the median wage among 25-34-year-old high school graduates. Greater increases are expected to reflect a tighter labor market and should lead to greater wage growth among minimum wage workers.

A person working 1-9 hours per week is 14.0 percent more likely to remain at the minimum wage than a person working 35 or more hours.

The exit probit confirms most of the patterns observed in the earlier sample stratifications. For example, exit rates are lowest among the eldest, the least educated, minorities and females. Moreover, the t-statistics reveal that these differences are statistically significant even after controlling for other worker characteristics, labor market conditions and job characteristics.

Several job characteristics are strong predictors of whether a worker's wage will exceed the minimum wage within a year. First, part-time workers are less likely to exit than full-time workers. A person working 1-9 hours per week is 14.0 percent more likely to remain at the minimum wage than a person working 35 or more hours. This is not surprising given that part-time workers are less likely to accrue job skills as quickly as full-time workers.

The level of job training workers receive in their occupation is another important determinant of whether the worker will remain at the minimum wage. We include two job training variables. Each ranges from 0 to 1 and indicates the portion of workers in a 3-digit occupation that receive training provided by the firm, or other types of training. Among minimum wage workers, the probability of an exit is increased by 21.2 percentage points when the worker is located in an occupation where 100% of the workers receive training from outside the firm compared to an occupation where no workers receive training outside the firm.

The models also allow for variation in exit rates by industry or occupation. Dummy variables are included for the 15 industries and 15 occupations that employ the largest number of minimum wage workers, and there are also controls for broadly defined occupations and industries. Relative to eating and drinking places (the largest employer of minimum wage workers), exit rates are 10 or more percentage points higher for employees in department stores, hospitals, construction, mining, durable manufacturing, and transportation, communication and utilities. Industries with relatively low exit rates (5 or more percentage points less than eating and drinking places) include colleges and universities and private households.

Cashiers are the most common occupation for minimum wage workers and are chosen as the reference group. Relative to cashiers, exit rates are 10 or more percentage points lower for waiters and waitresses; textile sewing machine operators, farm workers; and executive, administrative and managerial occupations — though there are few minimum wage workers in the last group. None of the occupations has an exit rate that significantly exceeds that of cashiers.

Increases in the minimum wage reduce the probability of an exit for at least two years.

Changes in the minimum wage and other labor market conditions have a statistically significant and important effect on the probability that a worker rises above the minimum wage within a year. A tighter labor market, reflected by a decrease in the adult unemployment rate increases the chance that a worker will exit minimum wage employment. However, the size of this effect is relatively small. For example, a one percentage point decrease in the adult unemployment rate would increase the probability of an exit by less than one percentage point. Perhaps this should be expected given that these variables may not accurately measure the tightness of the labor market for minimum wage workers specifically.

Labor market variables that are more directly related to the job market for minimum wage workers have greater explanatory power. For example, a one percentage point increase in teenagers as a share of the adult population is estimated to decrease the exit rate by 1.2 percentage points. As the 25th percentile of wages for young high school graduates rises relative to the minimum wage, the exit rate rises quickly. For example, if the ratio of the wage at the 25th percentile for young high school graduates to the minimum wage rises by 0.1, the probability of exiting rises by 2.5 percentage points. Also, as the ratio of the median to the 25th percentile rises by .1, the probability of an exit rises by 1.5 percentage points. Finally, if the median wage of high school graduates increases by 10 percent over the year, the probability of an exit increases by 2.0 percentage points.

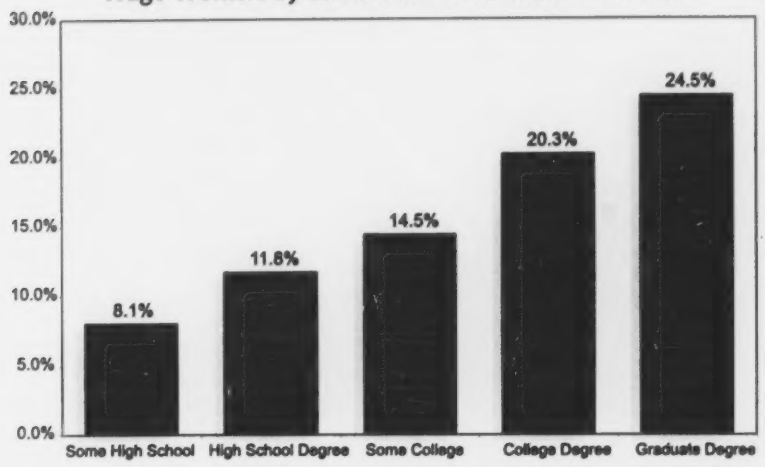
Increases in the minimum wage reduce the probability of an exit for at least two years. A 10 percent increase in the minimum in a given year reduces the probability of an exit by 7.2 percentage points in the first year after the increase, and by 1.2 percentage points in the second year.

5. Wage Growth In Minimum Wage Jobs

In this section, we examine the wage growth of minimum wage workers. Over the entire sample period, the median annual wage growth of minimum wage workers was 10.1 percent. For comparison purposes, the mean wage growth rate (25.9 percent) was also calculated. The reason that the mean is so much larger than the median is that there is a small subset of the sample with very high wage growth. For example, 6 percent of the sample reports wage growth in excess of 100 percent over the year, and 2 percent of the sample reports wage growth in excess of 200 percent. To provide a focus on more typical wage growth, we focus primarily on median growth in the analysis that follows. This reduces the influence of the few people with very large earnings growth on the results.

[M]edian wage growth tends to be higher for the sub-groups of workers that had the higher exit rates from minimum wage employment.

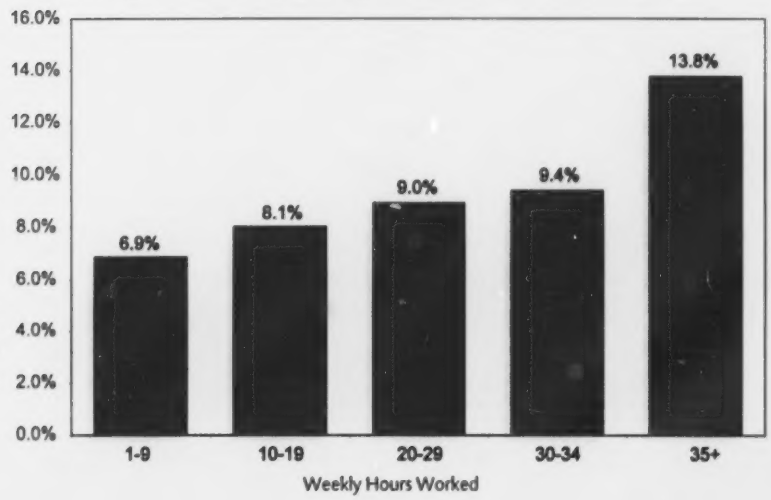
Median Annual Wage Growth of Minimum Wage Workers by Educational Attainment 1977-1997



Median wage growth is presented for several stratifications of the sample in Table 6. Not surprisingly, median wage growth tends to be higher for the sub-groups of workers that had the higher exit rates from minimum wage employment. For example, median wage growth rises with educational attainment. For minimum wage workers that haven't obtained a high school degree, median wage growth is 8.1 percent; for those with a graduate degree, the median is 24.5 percent. Also, as with exit rates, median wage growth is higher for men than women, whites than blacks, full-time than part-time workers, and for workers in occupations that entail more training.

To perform a multivariate analysis of wage growth, quantile regressions are used. A quantile regression can be estimated for each percentile of the wage growth distribution. For a given set of characteristics, the estimates of the various quantile regressions can be used to trace out a distribution of wage growth for workers with a given set of characteristics. Furthermore, comparing coefficients from the various quantile regressions can be used to determine whether a particular characteristic increases or reduces the range of wage growth among minimum wage workers. This point will be made clearer in our later discussion of the results.

Median Annual Wage Growth of Minimum Wage Workers by Weekly Hours Worked 1977-1997



In Table 7, we present estimates of an ordinary least squares model of wage growth, and a median regression (i.e., a quantile regression for the 50th percentile). The OLS model predicts mean wage growth for a given type of worker, whereas the median regression predicts median wage growth. A comparison of the coefficients reveals that

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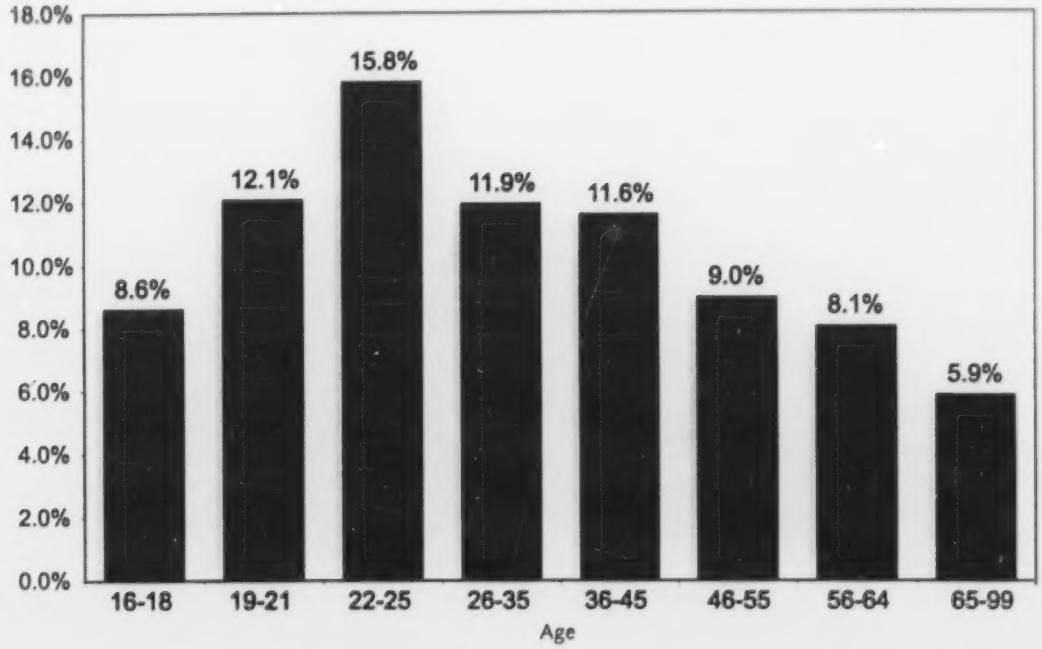
Median Annual Wage Growth
of Minimum Wage Workers by Age 1977-1997



most of the estimated coefficients on the variables have the same sign in the OLS and median regression model. However, many of the OLS coefficients are much larger in magnitude. The explanation for this result is that the OLS model places much greater weight on those observations with very large wage growth.

Since we prefer not to emphasize the effect of observations with extremely large wage growth, we will focus the rest of our discussion on the results of the median regression. Consistent with the estimated effect on the probability of an exit from minimum wage employment, full-time work and employment in an occupation that has high levels of training generate higher wage growth. Full-time workers have wage growth that is 4-6 percentage points higher than part-time workers, and an occupation with training for all workers has 5.4 (17.5) percent higher growth than an occupation with no training when the training is provided within (outside) the firm.

Labor market conditions have significant effects on median wage growth as well. Increases in the adult unemployment rate or decreases in the adult employment to population ratio reduce median wage growth. Also, a larger pool of teenagers reduces wage growth.

An increase in the minimum wage causes median wage growth to increase. However, it is important to note that there is not a one-to-one correspondence between the two. With a 10 percent higher minimum wage and the distribution of wages increased proportionately, median wage growth is estimated to be 8.5 percentage points higher.[10] However, this assumes that the minimum wage is

no higher relative to the wages of high school graduates. If the minimum wage rises by 10 percentage points and the wages of high school graduates are unchanged, median wage growth will increase by only 6.2 percent. [11]

It is also worth noting that an increase in the minimum wage has a negative effect on earnings growth in subsequent years. The lagged increase in the minimum has a statistically significant and negative effect on earnings growth. A 10 percent increase in the prior year's minimum wage leads to a decrease in the current year's median earnings growth of 0.9 percent.

6. The Distribution Of Wage Growth

In this section, we examine how various factors influence the distribution of wage growth among minimum wage workers using quantile regression approaches. In addition to the median regression discussed in the prior section, we estimate a regression for the 75th and 90th percentile. We do not estimate a regression for any percentiles below 50 percent given that about 40 percent of workers do not exit the minimum wage and they have wage growth of zero.[12]

Given that almost 40 percent continue at the minimum wage, the median regression results give a picture of what happens at only the lower end of the distribution of workers that go beyond the minimum wage.

[R]elative to a group of people that did not attend high school, the wage growth of people with a high school degree would be 2.2 percentage points higher at the median, 8.5 percentage points higher at the 75th percentile, and 20.9 percentage points higher at the 90th percentile.

By comparing the different quantile regressions, it is possible to determine what factors compress (or expand) the range of wage growth among minimum wage workers. Moreover, it will make it possible to determine what factors lead to exceptionally large improvements in earnings over a year.

The results of the median, 75th and 90th quantile regressions are presented in Table 8. The median regression results are identical to those in Table 7, but are presented again so as to make comparison across percentiles simpler.

One way to summarize the information available from the various quantile regressions is to look at the difference in the coefficients on a particular variable at the different quantiles. For example, relative to a group of people that did not attend high school, the wage growth of people with a high school degree would be 2.2 percentage points higher at the median, 8.5 percentage points higher at the 75th percentile, and 20.9 percentage points higher at the 90th percentile.

Hence, more education increases the upper range of wage growth. Since the lower bound for wage growth is effectively zero with a minimum wage in place, a higher value at the 90th percen-

Increases in the minimum wage tend to compress the growth of earnings across workers, particularly in the second year after the increase.

tile will translate into higher mean wage growth as well.[13]

Several other factors have an important influence on the upper range of wage growth among minimum wage workers as well. Part-time employment reduces the upper range of wage growth substantially. Compared to full-time workers, the wage growth of part-time workers is 4-6 percentage points lower at the median, but 11-17 percentage points lower at the 90th percentile. Compared to men, women's wage growth is 3 percentage points lower at the median, but 25 percentage points lower at the 90th percentile. Hence, while median wage growth is only slightly lower for part-time workers and women, the chance of a large improvement in earnings is much lower for these workers.

Training also increases the upper range of wage increases. As the percentage of workers receiving training from their employer rises from 0 to 100%, wage growth increases by 5.4 percentage points at the median but 65.5 percentage points at the 90th percentile. When the training is provided outside the firm, the comparable statistics are 17.5 and 49.1 percentage points.

Labor market conditions have an important effect on the distribution of wage growth. As the labor market tightens, the upper range of wage growth expands relative to the median. For example, if the adult unemployment rate falls by 1 percentage point, wage growth is increased by .2 percentage points at the median, .7 percentage points at the 75th percentile, and 1.5 percentage points at the 90th percentile. Also, as wages among young high school graduates increase relative to the minimum wage, there are much larger effects on the wage growth at the upper end of the distribution. While a 10 percent increase in the 25th percentile of high school graduate wages to the minimum wage increases wage growth by only 1.2 percentage points at the median, it increases wage growth by 7.1 percentage points at the 90th percentile.

Increases in the minimum wage tend to compress the growth of earnings across workers, particularly in the second year after the increase. A 10 percent increase in the minimum wage increases wage growth by 7.9 percentage points at the median, but 6.4 percentage points at the 90th percentile. However, in the second year after the increase, it will reduce wage growth by .9 percentage points at the median and 5.3 percentage points at the 90th percentile.

[I]t has been argued that an increase in the minimum wage can reduce training and the subsequent wage growth of workers.

Another conclusion to be drawn from the wage growth estimates is that rising wage inequality is associated with more rapid earnings growth among minimum wage workers. As the median to 25th ratio, or the 25th percentile to the minimum wage rises, wage growth among

minimum wage workers increases. Rising wage inequality is also associated with greater dispersion in the wage growth of minimum wage workers, however. For example, as the ratio of the median to 25th rises by .1, earnings growth of minimum wage workers is increased by .6 percent at the median, 1.8 percent at the 75th percentile, and 4.7 percent at the 90th percentile.

[A] 10 percentage point increase in the minimum wage cuts the effect of a high training occupation on median wage growth of minimum wage workers in half.

7. Job Training And The Minimum Wage

Several studies have argued that increases in the minimum wage would reduce training and subsequent wage growth of low-skill workers. In the standard human capital model (Becker 1964), firms will not pay for investments in general human capital because it would be impossible to force workers to stay after the training and allow the firm to recover its investment. As a consequence, workers must finance investments in human capital by taking wage cuts early in their career which are offset by higher wages after the training is complete.[14]

Since a minimum wage can prevent a worker from taking the necessary wage cut to finance investments in human capital, it has been argued that an increase in the minimum wage can reduce training and the subsequent wage growth of workers. Two empirical approaches have been employed for testing the theory. First, a test of whether a higher minimum wage reduces subsequent wage growth. Second, a test of whether a higher minimum wage reduces firm-provided training.

There are several studies that document that a higher minimum wage reduces subsequent wage growth.[15] However, it has been pointed out that reduced wage growth could be explained by factors other than reduced training. Several studies have used a more direct approach by testing whether a higher minimum wage reduces firm provision of training. The results from these studies are mixed. Leighton and Mincer (1981), Schiller (1994), and Neumark and Wascher (1998) find that higher minimum wages reduce training, whereas Grossberg and Sicilian (1999) and Acemoglu and Pischke (1999) find mixed evidence of such an effect.

A 20 percent increase in the minimum wage eliminates any advantage of a minimum wage worker being in a high training occupation.

Our earlier empirical results indicate that the provision of training has a positive effect on the wage growth of minimum wage workers. Our measure of training is not perfect, however, as it only captures the percentage of workers in a given detailed occupation that receive training. To the extent that the chance of receiving training varies across time or people, we can improve upon our earlier estimates. If, for example, an increase in the minimum wage reduces the chance that a minimum wage worker receives training, the effect of our training measure on wage growth should be lower following an increase in the minimum wage. Furthermore, to the extent

that the minimum wage "binds" more in some parts of the country, it will have a larger negative effect on training.

To investigate our hypothesis regarding training effects, we re-estimate the median wage growth equations and add an interaction term between our measures of training and the lagged increase in the minimum wage. The expectation is that an increase in the minimum wage will reduce the chance that a minimum wage worker receives training. Hence, we expect a negative coefficient on the interaction between our job training measures and the lagged value of the minimum wage increase. The results, presented in Table 9, are consistent with our hypothesis. The estimated coefficient on the interaction between training provided by the firm and the lagged value of the minimum wage increase is -.403 and is statistically significant at the .10 level. The implication is that a 10 percentage point increase in the minimum wage cuts the effect of a high training occupation on median wage growth of minimum wage workers in half.[16] A 20 percent increase in the minimum wage eliminates any advantage of a minimum wage worker being in a high training occupation.

In the case of training that occurs away from the firm, the interaction term has a coefficient of -.925 and is statistically significant at the .01 level. As with training located at the firm, a 10 percent increase in the minimum wage reduces the effect of a high training occupation by approximately one-half. Initially this might seem surprising since one might view such training as employee financed and thus not likely to be affected by increases in the minimum wage. However, according to CPS survey results, of those receiving training located outside of the firm, 41 percent report that the firm is paying for the training.

As an additional test of the training hypothesis, interactions between the training measures and the ratio of the 25th percentile of high school graduate wages to the minimum wage are introduced. The expectation is that the higher the ratio, the less binding is the minimum wage and the greater the chance that minimum wage workers benefit from high training occupations. The results are consistent with this hypothesis for both training measures. For training at the firm, when the ratio is 1.25, the net effect of a high training occupation on wage growth is estimated to be zero. At a ratio of 1.5, the net effect is .34 (i.e., median growth is 3 percent higher in occupations where the percentage of workers receiving training is 10 percent higher).

For training located outside of the firm, the interaction effect is also strong and negative. When the ratio of the 25th percentile to the minimum wage is 1.0, there is no advantage to minimum wage workers in high training occupations. As the ratio increases, the advantage grows.

8. Summary

This study shows that nearly two-thirds of minimum wage workers receive sufficient increases in their wages to earn above the minimum wage within a year. Thus, a minimum wage job is a short-lived phenomenon for the majority of workers. There is, however, a minority of workers that are stuck at the minimum wage. The primary objective of this study was to determine what

factors make it more likely that a worker will rise above the minimum wage.

Our results echo several of those found in other studies using different data sources. For example, the chance of exiting minimum wage employment rises with a person's education and hours worked, but is lower among women and blacks. We also find that the chance of exiting minimum wage employment is lower among workers in their 50s and 60s.

Several results are unique to our study. First, we demonstrate that statewide labor market conditions are important determinants of the wage growth among minimum wage workers. As the labor market tightens (e.g., the unemployment rate falls or the employment/population ratio rises), the chance of exiting minimum wage employment within a year increases and median wage growth rises. We also find some evidence that a tighter labor market tends to increase the range of wage growth among minimum wage workers, causing greater growth at the 90th than at the 50th percentile. A higher fraction of teenagers comprising a state's population has a negative effect on exit rates and wage growth.

Our study also shows that increases in wage inequality (as measured by the ratio of the median to the 25th percentile of wages among young high school graduates) increase exit rates and median wage growth. Rising inequality also increases the dispersion of wage growth among minimum wage workers.

Increases in the minimum wage reduce exit rates among minimum wage workers, but have a positive effect on median earnings growth. The positive effect on median earnings growth is dampened, however, if wages in the rest of the state are unchanged. We also find that a higher minimum wage reduces wage growth in subsequent years and causes a compression of wage growth among minimum wage workers.

Given that concerns have been raised regarding the impact of a higher minimum wage on training, we investigated how the interaction between minimum wage hikes and training impact wage growth. Our findings indicate that an increase in the minimum wage reduces the advantage of being in a high training occupation. An increase in the minimum wage relative to the wage rate of high school graduates also reduces the advantage of being in a high training occupation. These results are consistent with the theoretical prediction that a higher minimum wage reduces the chance that minimum wage workers receive training and dampens subsequent wage growth.

Data Appendix

The data for this study is drawn from the 1977-78 May Current Population Survey (CPS) and the 240 monthly CPS Outgoing Rotation Group (ORG) files from January 1979 to December 1998. In the CPS, eight panels are used to rotate the sample each month. A sample unit is interviewed for four consecutive months, and then, after an 8-month rest period, for the same four months a year later. Each month a new panel of addresses, or one-eighth of the total sample, is introduced.

The outgoing rotation groups (ORGs) include the people that are in either rotation group 4 or 8 (i.e., the subsamples that will be leaving for the 8-month rest period or permanently). Since 1979, the people in the ORGs were asked questions from an earnings supplement providing information on union status, weekly earnings, hourly earnings, and hours worked. Before 1979, the supplement questions were asked of all rotation groups but only in the May survey. Individuals potentially can be identified for the same month in consecutive years; that is, individuals in rotation group 4 in year 1 can be matched to individuals in rotation group 8 in year 2.

Matching people across years in the CPS was accomplished as follows: From the ORGs, data files were created for pairs of years (e.g., rotation 4 in January 1992 and rotation 8 in January 1993). Within each file, individuals were sorted on the basis of household ID, year, gender and age. To be considered an acceptable match, a rotation 8 individual in year 2 had to be matched with a rotation 4 individual in year 1, with identical sex, household ID, survey month, and an age difference between 0 and 2.[17] If more than one person in year 1 can be matched to a given individual in year 2, additional variables (e.g., marital status, education) are used to find the correct match. If it is impossible to find a unique match in year 1 for an individual in year 2, the observation is deleted. Starting in 1994, the CPS included reliable individual identifiers that simplified matching individuals across time.[18]

The sample includes wage and salary workers earning exactly the minimum wage in the first year of the 2-year panel.[19] The minimum wage is defined as the greater of the federal or state minimum wage and was computed for each month over the sample period. The wage rate is defined as the reported hourly wage for workers paid by the hour, and the usual weekly earnings divided by usual weekly hours for all others not paid by the hour. The sample excludes anyone that is not a wage and salary worker in the second year.

The individual data is matched to variables measured at the labor market level.[20] These variables include the median wage of high school graduates (excluding those with some college) aged 21-35. The other labor market variables are the teenager share of the working age population (ages 16 to 61), the prime age (age 25 to 61) employment to population ratio, and the prime age unemployment rate. Finally, we include a measure of job training computed as the percentage of workers who report receiving training in the worker's 3-digit Census occupation. The data sources for this variable are the January 1983 and 1991 CPS.[21]

Endnotes

[1]Baker, et al. (1999) and the references contained therein provide a sample of recent studies examining the effect of minimum wages on employment. Card and Krueger (1995) and Even and Macpherson (1996) describe the types of workers in minimum wage jobs. Neumark and Wascher (1998) and Acemoglu and Pischke (1999) provide a good background of the research on how minimum wages impact on-the-job training.

[2]For example, Smith and Vavrichek (1992) used the 1984 and 1985 panels of the Survey of Income and Program participation (SIPP); Schiller (1994) uses data from the National Longitudinal Survey to examine workers entering the labor market in 1980; and Grossberg and Sicilian (1999) use Employment Opportunities Pilot Project data from 1980-82.

[3]Additional details on the data set are provided in the data appendix.

[4]The small May 1977-78 and 1978-79 panels use the federal minimums. The data source for the federal and state minimum wages is the *Monthly Labor Review*.

[5]It is important to note that the wage measure used in this study does not include income from tips. The current federal law is that tipped workers must receive at least $2.13 per hour from their employer. The difference between the hourly wage and the minimum wage may be accounted for by tips through a "tip credit." Any tipped worker earning less than the minimum wage before tips is not included in our sample. However, in six states tipped workers must receive a hourly wage of at least the minimum wage before tips. To see the impact of these laws on our results, we reran our models deleting waiters and waitresses who are in those six states from the sample. The results for waiters and waitresses changed only slightly.

[6]The job training variables represent the percentage of workers in a 3-digit occupation that report receiving on-the-job training from their employer or from some other source. Details on its construction are in the data appendix.

[7]This is a "person-weighted" average in the sense that each person in the sample has an associated minimum wage increase. To the extent that there are more people in California than Iowa, a minimum wage increase in California will receive a greater weight than a minimum wage increase in Iowa.

[8]For example, if the minimum wage increases from $5.00 to $5.25 between 1995 and 1996, a person earning $5.00 in 1995 would have to earn more than $5.25 to have "exited" between 1995 and 1996.

[9]See Levy and Murnane (1992) for a review of this work.

[10]This figure is calculated in two steps. First, the coefficient on the minimum wage (.79) is added to the coefficient on the median high school graduate wage (.06). Second, the resulting figure (.85) is multiplied by .10.

[11]This result relies on the fact that the ratio of the 25th percentile of wages for high school graduates to the minimum would decrease. Specifically, it is calculated in the following manner. First, the coefficient on the 25th percentile of wages for high school graduates to the minimum (.12) times its mean value (1.43) is subtracted from the coefficient on the median high school graduate wage (.79). The resulting number (.62) is multiplied times .10.

[12]The consequence of this is that quantile regression estimates in the lower half of the distribution generally result in coefficient estimates of zero on all the variables. That is, predicted wage growth for workers in the lower half of the distribution is effectively zero.

[13]Given the much larger effect of education at the upper percentiles of the wage growth distribution, it is not surprising that the estimates of the impact of education are much larger in the OLS specification (which computes effects on mean wage growth) than in the median regression. In fact, a comparison of OLS coefficients with the estimates from the quantile regressions reveals that they usually lie between the coefficient from the median and 90th percentile regression.

[14]While the standard human capital model implies that higher minimum wages should reduce training, Acemoglu and Pischke (1999) show that allowing for a non-competitive labor market where workers can be paid less than their marginal product and some are credit constrained can reverse the prediction.

[15]For example, Leighton and Mincer (1981) and Hashimoto (1982).

[16]This is calculated by adding the coefficient on firm training (.08) to the product of .10 and the coefficient on firm training*lagged % increase in minimum wage (-.40).

[17]Since surveys can occur on different days of the month, age change need not equal 1.

[18]There are several reasons why matches may not be found for a given individual. The most important reasons for a match failure include: (i) a household moves; (ii) an individual moves out of the household; or (iii) the Census is

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unable to reinterview a household or obtain information on the individual. Perrachi and Welch (1995) analyze the attrition rates in matched March CPS files and find that the match rate is lowest among those in their early twenties. Sample sizes are reduced further due to partial panels in 1984-85, 1985-1986, 1994-95, and 1995-96 due to changes in Census location identifiers during 1985 and 1995.

[19]The May 1977-78 and 1978-79 panels use the federal minimums. The data source for the federal and state minimum wages is the *Monthly Labor Review*.

[20]The labor market variables are measured at the state level and calculated by quarter from the May 1977-1978 and 1979-98 ORG CPS.

[21]The variables were matched to the individual data using time-consistent 3-digit Census occupation and industry codes. The 1970 codes were matched to 1980 codes using the mapping included in U.S. Bureau of the Census, "The Relationship Between 1970 and 1980 Industry and Occupation Classification Systems," Technical Paper 59, February 1989. The minor differences between the 1990 and 1980 codes were resolved based on a 1992 Census Bureau memorandum.

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Table 1: Sample Means

Variable	Minimum Wage Workers 1977-97	Minimum Wage Workers 1994-97	All Workers 1994-97
Exit	65.23%	61.88%	n/a
Median Wage Gain	10.12%	17.65%	4.99%
Age:			
16-18	32.23%	30.09%	3.87%
19-21	13.41%	16.10%	5.20%
22-25	8.11%	9.15%	8.79%
26-35	14.57%	13.79%	26.33%
36-45	13.80%	10.68%	26.98%
46-55	8.17%	8.45%	18.86%
56-64	5.13%	6.91%	7.56%
65-99	4.58%	4.82%	2.39%
Education:			
Elementary School	7.56%	10.30%	3.16%
Some High School	36.53%	33.94%	8.29%
High School Degree	30.96%	36.10%	33.96%
Some College	21.41%	16.75%	29.01%
College Degree	2.98%	2.40%	17.38%
Graduate Degree	0.55%	0.40%	8.20%
Marital Status:			
Married, Spouse Present	28.81%	32.14%	57.89%
Ever Married, No Spouse Present	12.42%	12.22%	15.56%
Never Married	58.77%	55.64%	26.55%
Race/Ethnic:			
White	82.95%	82.69%	85.23%
Black	10.65%	14.05%	9.55%
Other Nonwhite	1.32%	2.17%	5.22%
Hispanic	15.89%	8.22%	7.70%
Female	62.86%	64.44%	49.10%
Weekly Hours Worked:			
1-9	7.51%	6.01%	2.27%
10-19	23.40%	21.58%	4.70%
20-29	27.76%	26.10%	8.27%
30-34	17.88%	17.54%	4.76%
35 or more	23.45%	28.76%	80.00%
Job Training:			
Provided by Firm	16.44%	16.64%	27.22%
Other Types of Training	5.42%	5.05%	13.01%
Public	9.77%	10.66%	17.22%
Detailed Industries:			
Eating and Drinking Places	27.81%	21.03%	5.25%
Grocery Stores	7.28%	6.57%	2.61%
Department Stores	3.37%	4.92%	1.95%
Colleges and Universities	4.08%	4.08%	2.66%
Apparel and Accessories, exc. Knit.	2.81%	4.14%	0.68%
Elementary and Secondary Schools	2.43%	3.60%	6.29%
Nursing and Personal Care Facilities	1.38%	2.82%	1.63%
Hotels and Motels	2.70%	2.68%	1.32%
Apparel and Accessories Stores, exc. Shoes	1.21%	2.30%	0.63%
Gasoline Service Stations	0.77%	1.43%	0.31%
Misc. Entertainment and Recreation Services	3.81%	1.97%	1.21%
Private Household	1.49%	1.76%	0.83%
Drug Stores	1.21%	1.73%	0.47%
Hospitals	0.83%	1.47%	4.70%
Construction	0.88%	1.26%	5.08%

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Table 1: Continued

Variable	Minimum Wage Workers 1977-97	Minimum Wage Workers 1994-97	All Workers 1994-97
Industries not specified above:			
Agriculture	2.32%	2.37%	1.52%
Mining	0.06%	0.04%	0.67%
Durable Manufacturing	2.26%	3.14%	9.98%
Transportation, Communication and Utilities	1.66%	1.58%	7.32%
Wholesale Trade	2.15%	1.87%	3.73%
Retail Trade	7.95%	8.97%	5.77%
Finance, Insurance and Real Estate	1.55%	1.81%	6.42%
Business and Repair Services	3.26%	3.64%	6.11%
Personal Services	2.21%	2.13%	1.14%
Entertainment and Recreation Services	2.10%	1.12%	0.51%
Other Professional Services	8.77%	6.10%	9.30%
Public Administration	1.27%	1.56%	5.47%
Non-durable Manufacturing	2.37%	3.93%	6.43%
Detailed Occupations:			
Cashiers	11.75%	8.86%	2.49%
Waiters and Waitresses	7.89%	5.83%	1.27%
Cooks, Except Short Order	7.12%	5.96%	1.79%
Sales Workers, other Commodities	3.26%	5.25%	1.23%
Janitors and Cleaners	3.59%	4.62%	1.83%
Misc. Food Preparation Occupations	2.87%	3.83%	0.60%
Stock Handlers and Baggers	4.14%	3.96%	0.96%
Textile Sewing Machine Operators	2.37%	3.58%	0.52%
Food Counter, Fountain and Related Occupations	2.92%	2.79%	0.30%
Nursing Aides, Orderlies and Attendants	2.54%	2.38%	1.59%
Waiters'/Waitresses' Assistants	3.04%	2.40%	0.42%
Maids and Housemen	1.60%	2.14%	0.59%
Sales Workers, Apparel	0.88%	1.92%	0.37%
Farm Workers	0.94%	1.52%	0.62%
Secretaries	1.21%	1.67%	2.94%
Occupations not specified above:			
Executive, Administrative and Managerial	0.66%	1.00%	12.77%
Professionals	2.65%	1.92%	15.08%
Technicians and Related Support Occupations	0.55%	0.71%	3.50%
Sales Occupations	4.08%	3.91%	7.13%
Administrative Support Occupations	7.67%	9.22%	13.18%
Service Occupations	13.30%	9.29%	5.98%
Farming, Forestry and Fishing Occupations	2.26%	1.58%	0.99%
Precision Production, Craft and Repair	1.60%	2.48%	10.29%
Machine Operators, Assemblers and Inspectors	3.81%	5.44%	6.04%
Transportation & Material Moving Occup.	2.04%	2.22%	4.24%
Handlers, Equip. Cleaners, Helpers and Laborers	5.24%	5.52%	3.27%
Labor Market Variables:			
Age 25-61 Unemployment Rate	4.17%	5.50%	4.18%
Age 25-61 Employment to Population Ratio	78.19%	74.06%	78.47%
Teenagers as a Share of Age 16-61 Population	9.47%	10.77%	9.18%
% Increase in Minimum Wage	8.33%	3.14%	4.80%
Lagged % Increase in Minimum Wage	5.40%	4.24%	4.15%
Wage Ratio (25-34-Year-Old High School Graduates)			
50th to 25th percentile	1.30	1.33	1.30
25th percentile to Minimum Wage	1.43	1.39	1.47
% Change in Median High School Graduate Wage	4.32%	4.20%	3.55%
Sample Size	24,733	1,812	648, 254

Note: The data source for the minimum wage worker figures is the May 1977-78 and 1979-1998 ORG CPS panel. The source for all worker figures is the 1994-97 ORG CPS.

Table 2: Percent of Total Work Force Earning the Minimum Wage by Age and Educational Attainment

Age	Less than High School	High School Graduate	Some College	College Graduate	Graduate Degree	All
16-18	12.86	8.67	6.49	n/a	n/a	11.57
19-21	5.91	3.75	4.38	n/a	n/a	4.29
22-25	5.17	2.34	2.18	0.41	n/a	2.12
26-35	5.01	1.3	0.59	0.12	0.04	1.05
36-45	3.57	0.76	0.46	0.18	0.07	0.74
46-55	3.18	0.61	0.43	0.37	0	0.66
56-64	2.89	1.02	0.54	0.07	0.2	0.95
65+	5.68	2.7	1.99	0.53	0.72	2.68
All	6.23	1.49	1.15	0.22	0.07	1.75

Note: Data source is the 1998 Current Population Survey Outgoing Rotation Group. Statistics are not reported for cells with fewer than 200 observations.

Table 3: Exit Rate in Minimum Wage Jobs

Variable	% Exiting	Sample Size
Year:		
78	42.71%	96
79	61.22%	686
80	54.98%	2,070
81	53.13%	2,654
82	59.81%	2,431
83	58.50%	2,217
84	62.77%	2,197
85	67.20%	997
86	66.52%	442
87	65.81%	1,515
88	65.69%	1,393
89	69.54%	1,139
90	63.95%	943
91	50.83%	602
92	64.65%	1,242
93	69.30%	1,277
94	70.39%	1,020
95	66.67%	294
96	65.20%	227
97	63.98%	683
98	65.95%	608
Education:		
Less than High School	56.82%	10,970
High School Graduate	64.67%	8,928
Some College	67.63%	4,143
College Graduate	71.33%	593
Graduate Degree	72.73%	99
Age:		
16-18	61.78%	7,443
19-21	67.80%	3,981
22-25	68.98%	2,263
26-35	64.63%	3,410
36-45	62.11%	2,642
46-55	58.78%	2,090
56-64	51.46%	1,710
65-99	41.24%	1,193
Race:		
Black	57.51%	3,476
White	62.50%	20,451
Other	64.89%	806

Continued on next page

Table 3: Continued

Variable	% Exiting	Sample Size
Hispanic Status:		
Non-Hispanic	62.04%	22,701
Hispanic	60.09%	2,032
Gender:		
Male	66.47%	8,795
Female	59.34%	15,938
Weekly Hours Worked:		
1-9	54.67%	1,487
10-19	58.26%	5,338
20-29	61.11%	6,456
30-34	60.98%	4,339
35 or more	67.34%	7,113
Percent in 3-Digit Occupation With Firm Training:		
<10%	54.27%	3,409
10%-19%	61.82%	15,344
20%-29%	65.87%	3,548
30%-39%	66.88%	2,005
40%-49%	68.60%	293
50% or more	66.42%	134
Percent in 3-Digit Occupation With Other Training:		
<10%	61.14%	20,841
10%-19%	65.88%	3,089
20%-29%	64.09%	557
30%-39%	63.51%	74
40%-49%	71.85%	135
50% or more	67.57%	37
All years (1977-97)	65.23%	24,733

Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel. Means are weighted by the appropriate sample size.

Table 4: Means by Exit Status

Variable	Did Not Exit	Exited
Age:		
16-18	30.2%	30.0%
19-21	13.6%	17.6%
22-25	7.4%	10.2%
26-35	12.8%	14.4%
36-45	10.6%	10.7%
46-55	9.1%	8.0%
56-64	8.8%	5.8%
65-99	7.4%	3.2%
Education:		
Elementary School	14.0%	8.0%
Some High School	36.1%	32.6%
High School Degree	33.4%	37.7%
Some College	14.2%	18.3%
College Degree	1.8%	2.8%
Graduate Degree	0.3%	0.5%
Marital Status (never married reference group):		
Never Married	52.8%	57.4%
Married, Spouse Present	32.3%	32.1%
Ever Married, No Spouse Present	15.0%	10.5%
Race/Ethnic:		
White, Non-Hispanic	81.3%	83.5%
Black	15.7%	13.1%
Other Nonwhite	2.0%	2.3%
Hispanic	8.6%	8.0%
Female	68.7%	62.0%
Hours Worked (35+ reference group):		
1-9	7.1%	5.3%
10-19	23.6%	20.3%
20-29	26.6%	25.8%
30-34	18.0%	17.3%
>34	24.6%	31.3%
Job training:		
Provided by firm	15.8%	17.2%
Other types of training	4.7%	5.3%
Public	11.9%	10.0%
Sample Size	9,429	15,304

Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel.

Table 5: Exit Probit

Variable	Marginal Probability Effect	T-statistic
Age (16-18 reference group):		
19-21	0.012	0.94
22-25	0.003	0.19
26-35	-0.028	-1.89
36-45	-0.045	-2.75*
46-55	-0.067	-3.84*
56-64	-0.130	-7.15*
65-99	-0.230	-11.44*
Education (elementary school reference group):		
Some High School	0.055	4.23*
High School Degree	0.099	8.05*
Some College	0.128	8.55*
College Degree	0.172	6.98*
Graduate Degree	0.218	4.07*
Marital Status (never married reference group):		
Married, Spouse Present	0.057	5.00*
Ever Married, No Spouse Present	0.025	1.79
Race/Ethnic (white, non-hispanic reference group):		
Black	-0.026	-2.60*
Other Nonwhite	0.005	0.23
Hispanic	-0.051	-4.16*
Female	-0.068	-8.07*
Hours Worked (35+ reference group):		
1-9	-0.140	-9.18*
10-19	-0.115	-10.83*
20-29	-0.086	-8.74*
30-34	-0.073	-7.12*
Job training (no training reference group):		
Provided by firm	0.078	1.28
Other types of training	0.212	2.24*
Public	-0.035	-2.45*
Detailed Industries (Eating and Drinking Places reference group):		
Grocery Stores	0.011	0.57
Department Stores	0.137	6.70*
Colleges and Universities	-0.080	-3.62*
Apparel and Accessories, exc. Knit.	-0.039	-1.29
Elementary and Secondary Schools	0.012	0.55

Continued on next page

Table 5: Continued

Variable	Marginal Probability Effect	T-statistic
Nursing and Personal Care Facilities	0.060	2.40*
Hotels and Motels	-0.029	-1.19
Apparel and Accessories Stores, exc. Shoes	0.072	2.53*
Gasoline Service Stations	0.026	0.82
Misc. Entertainment and Recreation Services	0.011	0.42
Private Household	-0.069	-2.28*
Drug Stores	0.015	0.54
Hospitals	0.170	5.44*
Construction	0.120	3.57*
Industries not specified above:		
Agriculture	-0.013	-0.32
Mining	0.160	0.92
Durable Manufacturing	0.124	4.96*
Transportation, Communication and Utilities	0.119	3.94*
Wholesale Trade	0.015	0.55
Retail Trade	0.025	1.43
Finance, Insurance and Real Estate	0.085	3.06*
Business and Repair Services	0.023	1.11
Personal Services	-0.005	-0.19
Entertainment and Recreation Services	-0.044	-1.41
Other Professional Services	-0.003	-0.17
Public Administration	0.026	0.83
Non-durable Manufacturing	0.077	3.41*
Detailed Occupations (Cashiers reference group):		
Waiters and Waitresses	-0.177	-8.89*
Cooks, Except Short Order	-0.022	-1.11
Sales Workers, other Commodities	-0.048	-2.52*
Janitors and Cleaners	-0.044	-2.04*
Misc. Food Preparation Occupations	-0.052	-2.40*
Stock Handlers and Baggers	-0.029	-1.34
Textile Sewing Machine Operators	-0.100	-3.05*
Food Counter, Fountain and Related Occupations	0.015	0.64
Nursing Aides, Orderlies and Attendants	-0.060	-1.92
Waiters'/Waitresses' Assistants	-0.054	-2.14*
Maids and Housemen	-0.036	-1.25
Sales Workers, Apparel	-0.029	-0.98
Farm Workers	-0.138	-2.86*
Secretaries	0.006	0.20

Continued on next page

Table 5: Continued

Variable	Marginal Probability Effect	T-statistic
Occupations not specified above:		
Executive, Administrative and Managerial	-0.121	-3.18*
Professionals	-0.062	-1.64
Technicians and Related Support Occupations	0.003	0.07
Sales Occupations	-0.015	-0.72
Administrative Support Occupations	-0.029	-1.57
Service Occupations	-0.064	-3.43*
Farming, Forestry and Fishing Occupations	-0.047	-1.47
Precision Production, Craft and Repair Occupations	-0.001	-0.05
Machine Operators, Assemblers and Inspectors	-0.045	-2.02*
Transportation and Material Moving Occupations	-0.023	-0.86
Handlers, Equip. Cleaners, Helpers and Laborers	-0.065	-3.13*
Labor Market Variables:		
Age 25-61Unemployment Rate	-0.328	-1.46
Age 25-61 Employment to Population Ratio	0.572	5.22*
Teenagers as a Share of Age 16-61 Population	-1.232	-5.22*
% Change in Median High School Graduate Wage	0.203	4.45*
Wage Ratio (25-34-Year-Old High School Graduates)		
50th to 25th percentile	0.148	3.29*
25th percentile to Minimum Wage	0.253	9.48*
% Increase in Minimum Wage	-0.717	-9.01*
Lagged % Increase in Minimum Wage	-0.120	-1.68
Intercept	-0.625	-4.69*
Sample Size	24,733	
Log-Likelihood	15,445.95	
Scale Factor	0.379	

*Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel. The marginal probability effect (MPE) is the estimated effect of a one-unit change in the explanatory variable on the probability that a worker with characteristics equal to the sample mean is offered a pension. The MPE divided by the scale factor yields the associated probit coefficient. A * indicates that a coefficient is statistically significant at the 5% level. If no * is next to a coefficient, then it is statistically insignificant at the 5% level.*

Table 6: Wage Gain in Minimum Wage Jobs

Variable	% Wage Gain	Sample Size
Year:		
78	15.22%	96
79	13.21%	686
80	10.34%	2,070
81	10.97%	2,654
82	4.48%	2,431
83	4.48%	2,217
84	4.48%	2,197
85	7.46%	997
86	8.96%	442
87	7.46%	1,515
88	10.45%	1,393
89	13.43%	1,139
90	17.65%	943
91	13.16%	602
92	5.88%	1,242
93	7.06%	1,277
94	11.76%	1,020
95	9.81%	294
96	17.65%	227
97	17.65%	683
98	15.79%	608
Education:		
Less than High School	8.06%	10,970
High School Graduate	11.76%	8,928
Some College	14.47%	4,143
College Graduate	20.32%	593
Graduate Degree	24.53%	99
Age:		
16-18	8.62%	7,443
19-21	12.07%	3,981
22-25	15.82%	2,263
26-35	11.94%	3,410
36-45	11.59%	2,642
46-55	8.96%	2,090
56-64	8.06%	1,710
65-99	5.88%	1,193
Race:		
Black	8.42%	3,476
White	10.39%	20,451
Other	11.94%	806

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Table 6: Continued

Variable	% Wage Gain	Sample Size
Hispanic Status:		
Non-Hispanic	9.68%	22,701
Hispanic	11.76%	2,032
Gender:		
Male	12.07%	8,795
Female	8.96%	15,938
Weekly Hours Worked:		
1-9	6.90%	1,487
10-19	8.06%	5,338
20-29	8.96%	6,456
30-34	9.43%	4,339
35 or more	13.79%	7,113
Percent in 3-Digit Occupation With Firm Training:		
<10%	8.06%	3,409
10%-19%	9.41%	15,344
20%-29%	12.90%	3,548
30%-39%	12.90%	2,005
40%-49%	14.93%	293
50% or more	17.17%	134
Percent in 3-Digit Occupation With Other Training:		
<10%	9.43%	20,841
10%-19%	12.07%	3,089
20%-29%	17.65%	557
30%-39%	16.38%	74
40%-49%	17.31%	135
50% or more	20.32%	37

Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel.

Table 7: OLS and 50th Percentile Wage Change Regression Results

	OLS		50th percentile	
	Coeff.	t-stat	Coeff.	t-stat
Age (16-18 reference group):				
19-21	-0.002	-0.13	0.011	2.80*
22-25	0.102	5.73*	0.023	4.93*
26-35	0.083	4.58*	0.004	0.86
36-45	0.076	3.79*	-0.002	-0.44
46-55	0.110	5.21*	-0.009	-1.67
56-64	0.028	1.28	-0.021	-3.63*
65-99	-0.063	-2.55*	-0.041	-6.40*
Education (elementary school reference group):				
Some High School	0.059	3.69*	0.009	2.08*
High School Degree	0.105	6.93*	0.022	5.56*
Some College	0.199	10.96*	0.046	9.64*
College Degree	0.348	11.92*	0.122	15.92*
Graduate Degree	0.593	9.51*	0.174	10.65*
Marital Status (never married reference group):				
Married, Spouse Present	0.057	4.13*	0.014	3.73*
Ever Married, No Spouse Present	0.028	1.63	0.010	2.20*
Race/Ethnic (white,non-hispanic reference group):				
Black	0.019	1.57	-0.001	-0.45
Other Nonwhite	-0.014	-0.54	-0.004	-0.58
Hispanic	-0.045	-3.00*	-0.018	-4.47*
Female	-0.136	-13.41*	-0.030	-11.26*
Hours Worked (35+ reference group):				
1-9	-0.057	-3.08*	-0.058	-11.88*
10-19	-0.095	-7.33*	-0.054	-15.80*
20-29	-0.086	-7.22*	-0.045	-14.62*
30-34	-0.076	-6.18*	-0.037	-11.47*
Job training (no training reference group):				
Provided by firm	0.362	4.97*	0.054	2.81*
Other types of training	0.444	3.90*	0.175	5.88*
Public	-0.034	-1.92	-0.012	-2.59*
Detailed Industries (Eating and Drinking Places reference group):				
Grocery Stores	0.055	2.36*	0.014	2.33*
Department Stores	0.078	3.21*	0.045	7.09*
Colleges and Universities	0.006	0.21	-0.028	-3.89*
Apparel and Accessories, exc. Knit.	0.023	0.60	-0.010	-1.01
Elementary and Secondary Schools	0.063	2.23*	0.011	1.44
Nursing and Personal Care Facilities	0.023	0.73	0.018	2.23*

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Table 7: Continued

	OLS		50th percentile	
	Coeff.	t-stat	Coeff.	t-stat
Hotels and Motels	-0.014	-0.46	-0.003	-0.40
Apparel and Accessories Stores, exc. Shoes	0.077	2.23*	0.021	2.30*
Gasoline Service Stations	0.081	2.17*	0.020	2.05*
Misc. Entertainment and Recreation Services	0.106	3.44*	0.012	1.46
Private Household	0.116	3.14*	0.027	2.85*
Drug Stores	-0.008	-0.24	0.003	0.32
Hospitals	0.292	8.06*	0.137	14.47*
Construction	0.206	5.26*	0.124	12.11*
Industries not specified above:				
Agriculture	0.137	2.82*	0.019	1.50
Mining	0.184	0.96	0.030	0.62
Durable Manufacturing	0.190	6.46*	0.070	9.05*
Transportation, Communication and Utilities	0.193	5.50*	0.073	7.91*
Wholesale Trade	0.102	3.11*	0.012	1.39
Retail Trade	0.006	0.30	0.016	2.90*
Finance, Insurance, and Real Estate	0.156	4.70*	0.077	8.88*
Business and Repair Services	0.025	0.98	0.014	2.15*
Personal Services	0.067	2.15*	0.019	2.34*
Entertainment and Recreation Services	-0.052	-1.35	-0.010	-1.00
Other Professional Services	0.050	2.25*	0.009	1.49
Public Administration	0.113	2.93*	0.007	0.70
Non-durable Manufacturing	0.161	5.92*	0.037	5.15*
Detailed Occupations (Cashiers reference group):				
Waiters and Waitresses	-0.035	-1.43	-0.030	-4.64*
Cooks, Except Short Order	-0.030	-1.25	-0.008	-1.24
Sales Workers, other Commodities	-0.031	-1.36	-0.013	-2.17*
Janitors and Cleaners	-0.021	-0.81	-0.010	-1.50
Misc. Food Preparation Occupations	-0.039	-1.48	-0.004	-0.53
Stock Handlers and Baggers	-0.029	-1.13	-0.009	-1.27
Textile Sewing Machine Operators	-0.057	-1.40	-0.021	-1.96*
Food Counter, Fountain and Related Occup.	-0.001	-0.03	0.012	1.58
Nursing Aides, Orderlies and Attendants	-0.099	-2.60*	-0.036	-3.59*
Waiters'/Waitresses' Assistants	-0.020	-0.64	-0.004	-0.48
Maids and Housemen	-0.022	-0.61	-0.005	-0.58
Sales Workers, Apparel	-0.008	-0.21	-0.004	-0.44
Farm Workers	-0.160	-2.70*	-0.053	-3.41*
Secretaries	0.014	0.39	0.043	4.52*

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Table 7: Continued

	OLS		50th percentile	
	Coeff.	t-stat	Coeff.	t-stat
Occupations not specified above:				
Executive, Administrative and Managerial	0.058	1.26	-0.026	-2.16*
Professionals	-0.063	-1.40	-0.029	-2.40*
Technicians and Related Support Occup.	-0.015	-0.28	0.012	0.84
Sales Occupations	0.045	1.78	-0.005	-0.76
Administrative Support Occupations	-0.050	-2.23*	-0.003	-0.53
Service Occupations	-0.054	-2.37*	-0.015	-2.55*
Farming, Forestry and Fishing Occupations	-0.035	-0.89	-0.020	-1.98*
Precision Production, Craft and Repair	0.017	0.55	0.027	3.39*
Machine Operators, Assemblers and Inspectors	-0.073	-2.75*	-0.007	-0.97
Transportation and Material Moving Occup.	0.068	2.16*	0.025	3.06*
Handlers, Equip. Cleaners, Helpers and Laborers	-0.046	-1.86	-0.006	-0.97
Labor Market Variables:				
Age 25-61 Unemployment Rate	-0.482	-1.75	-0.211	-2.91*
Age 25-61 Employment to Population Ratio	0.219	1.64	0.101	2.89*
Teenagers as a Share of Age 16-61 Population	-0.812	-2.82*	-0.399	-5.29*
% Change in Median H.S. Graduate Wage	0.269	4.83*	0.057	3.90*
Wage Ratio (25-34-Year-Old High School Graduates)				
50th to 25th percentile	0.289	5.31*	0.059	4.14*
25th percentile to Minimum Wage	0.384	11.95*	0.118	14.04*
% Increase in Minimum Wage	0.728	7.49*	0.788	30.89*
Lagged % Increase in Minimum Wage	-0.325	-3.75*	-0.090	-3.94*
Intercept	-0.839	-5.17*	-0.173	-4.07*
R-Squared	0.082		0.048	

*Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel. The sample size is 24,733 for both models. A Pseudo R-Squared is reported for the 50th percentile regression. A * indicates that a coefficient is statistically significant at the 5% level. If no * is next to a coefficient, then it is statistically insignificant at the 5% level.*

Table 8: 50th, 75th and 90th Percentile Wage Change Regression Results

Variable	50th percentile Coeff.	50th percentile t-stat	75th percentile Coeff.	75th percentile t-stat	90th percentile Coeff.	90th percentile t-stat
Age (16-18 reference group):						
19-21	0.011	2.80*	0.016	1.47	0.016	0.29
22-25	0.023	4.93*	0.064	5.13*	0.218	7.76*
26-35	0.004	0.86	0.042	3.32*	0.165	5.69*
36-45	-0.002	-0.44	0.013	0.96	0.163	5.13*
46-55	-0.009	-1.67	0.010	0.65	0.190	5.57*
56-64	-0.021	-3.63*	-0.021	-1.34	0.103	2.89*
65-99	-0.041	-6.40*	-0.068	-3.94*	-0.019	-0.49
Education (elementary school reference group):						
Some High School	0.009	2.08*	0.038	3.36*	0.094	3.83*
High School Degree	0.022	5.56*	0.085	8.04*	0.209	9.03*
Some College	0.046	9.64*	0.178	13.87*	0.427	15.14*
College Degree	0.122	15.92*	0.486	23.68*	0.942	20.81*
Graduate Degree	0.174	10.65*	0.975	22.26*	1.883	19.82*
Marital Status (never married reference group):						
Married, Spouse Present	0.014	3.73*	0.036	3.71*	0.050	2.18*
Ever Married, No Spouse Present	0.010	2.20*	0.032	2.59*	0.025	0.91
Race/Ethnic (white,non-hispanic reference group):						
Black	-0.001	-0.45	0.005	0.53	0.013	0.65
Other Nonwhite	-0.004	-0.58	-0.013	-0.69	-0.001	-0.03
Hispanic	-0.018	-4.47	-0.038	-3.50*	-0.073	-3.01*
Female	-0.030	-11.26*	-0.106	-14.55*	-0.252	-15.26*
Hours Worked (35+ reference group):						
1-9	-0.058	-11.88*	-0.120	-9.17*	-0.167	-5.74*
10-19	-0.054	-15.80*	-0.122	-13.36*	-0.168	-8.20*
20-29	-0.045	-14.62*	-0.106	-12.61*	-0.158	-8.53*
30-34	-0.037	-11.47*	-0.077	-8.80*	-0.115	-5.93*
Job training (no training reference group):						
Provided by firm	0.054	2.81*	0.178	3.46*	0.655	5.49*
Other types of training	0.175	5.88*	0.574	7.10*	0.491	2.75*
Public	-0.012	-2.59*	-0.032	-2.60*	-0.043	-1.62
Detailed Industries (Eating and Drinking Places reference group):						
Grocery Stores	0.014	2.33*	0.014	0.84	0.072	1.95
Department Stores	0.045	7.09*	0.045	2.64*	0.043	1.13
Colleges and Universities	-0.028	-3.89*	-0.022	-1.13	0.005	0.12
Apparel and Accessories, exc. Knit.	-0.010	-1.01	0.009	0.36	-0.012	-0.20
Elementary and Secondary Schools	0.011	1.44	0.056	2.83*	0.160	3.75*
Nursing and Personal Care Facilities	0.018	2.23*	0.025	1.12	-0.012	-0.23
Hotels and Motels	-0.003	-0.40	-0.001	-0.05	0.016	0.33
Apparel and Accessories Stores, exc. Shoes	0.021	2.30*	0.037	1.55	0.016	0.31
Gasoline Service Stations	0.020	2.05*	0.060	2.28*	0.145	2.57*
Misc. Entertainment and Recreation Services	0.012	1.46	0.041	1.88	0.101	2.11*
Private Household	0.027	2.85*	0.111	4.20*	0.173	2.98*
Drug Stores	0.003	0.32	-0.014	-0.60	0.004	0.07
Hospitals	0.137	14.47*	0.377	14.77*	0.531	9.27*
Construction	0.124	12.11*	0.281	10.15*	0.417	6.89*

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Table 8: Continued

Variable	50th percentile Coeff.	50th percentile t-stat	75th percentile Coeff.	75th percentile t-stat	90th percentile Coeff.	90th percentile t-stat
Industries not specified above:						
Agriculture	0.019	1.50	0.062	1.91	0.114	1.64
Mining	0.030	0.62	0.429	3.45*	0.297	0.98
Durable Manufacturing	0.070	9.05*	0.239	11.53*	0.424	9.11*
Transportation, Communication and Utilities	0.073	7.91*	0.230	9.20*	0.624	11.39*
Wholesale Trade	0.012	1.39	0.061	2.62*	0.153	2.98*
Retail Trade	0.016	2.90*	0.012	0.82	-0.001	-0.02
Finance, Insurance and Real Estate	0.077	8.88*	0.134	5.68*	0.247	4.82*
Business and Repair Services	0.014	2.15*	0.041	2.23*	0.050	1.27
Personal Services	0.019	2.34*	0.038	1.74	0.190	3.96*
Entertainment and Recreation Services	-0.010	-1.00	-0.010	-0.35	-0.057	-0.93
Other Professional Services	0.009	1.49	0.032	2.00*	0.125	3.64*
Public Administration	0.007	0.70	0.090	3.33*	0.303	4.98*
Non-durable Manufacturing	0.037	5.15*	0.122	6.34*	0.244	5.71*
Detailed Occupations (Cashiers reference group):						
Waiters and Waitresses	-0.030	-4.64*	-0.027	-1.56	0.008	0.21
Cooks, Except Short Order	-0.008	-1.24	-0.045	-2.67*	-0.110	-2.92*
Sales Workers, other Commodities	-0.013	-2.17*	-0.023	-1.39	-0.043	-1.17
Janitors and Cleaners	-0.010	-1.50	-0.033	-1.75	-0.018	-0.44
Misc. Food Preparation Occupations	-0.004	-0.53	-0.029	-1.54	-0.096	-2.29*
Stock Handlers and Baggers	-0.009	-1.27	-0.018	-0.97	-0.086	-2.10*
Textile Sewing Machine Operators	-0.021	-1.96*	-0.055	-1.96*	-0.078	-1.22
Food Counter, Fountain and Related Occupations	0.012	1.58	-0.006	-0.31	-0.030	-0.65
Nursing Aides, Orderlies and Attendants	-0.036	-3.59*	-0.096	-3.50*	-0.155	-2.44*
Waiters'/Waitresses' Assistants	-0.004	-0.48	-0.016	-0.74	-0.042	-0.86
Maids and Housemen	-0.005	-0.58	-0.042	-1.63	-0.110	-1.95
Sales Workers, Apparel	-0.004	-0.44	-0.010	-0.40	-0.010	-0.19
Farm Workers	-0.053	-3.41*	-0.156	-3.85*	-0.269	-3.07*
Secretaries	0.043	4.52*	0.029	1.10	-0.022	-0.37
Occupations not specified above:						
Executive, Administrative and Managerial	-0.026	-2.16	0.003	0.08	0.177	2.39*
Professionals	-0.029	-2.40	-0.077	-2.39*	0.000	0.00
Technicians and Related Support Occupations	0.012	0.84	0.102	2.65*	0.162	1.89
Sales Occupations	-0.005	-0.76	0.016	0.88	0.092	2.35*
Administrative Support Occupations	-0.003	-0.53	-0.054	-3.33*	-0.101	-2.76*
Service Occupations	-0.015	-2.55*	-0.062	-3.82*	-0.116	-3.21*
Farming, Forestry and Fishing Occupations	-0.020	-1.98*	-0.017	-0.65	-0.056	-0.97
Precision Production, Craft and Repair Occupations	0.027	3.39*	0.063	2.89*	0.060	1.22
Machine Operators, Assemblers and Inspectors	-0.007	-0.97	-0.044	-2.33*	-0.099	-2.34*
Transportation and Material Moving Occupations	0.025	3.06*	0.074	3.35*	0.133	2.70*
Handlers, Equip. Cleaners, Helpers and Laborers	-0.006	-0.97	-0.027	-1.53	-0.056	-1.46

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Table 8: Continued

Variable	50th percentile Coeff.	50th percentile t-stat	75th percentile Coeff.	75th percentile t-stat	90th percentile Coeff.	90th percentile t-stat
Labor Market Variables:						
Age 25-61 Unemployment Rate	-0.211	-2.91*	-0.736	-3.75*	-1.517	-3.43*
Age 25-61 Employment to Population Ratio	0.101	2.89*	0.069	0.74	-0.086	-0.41
Teenagers as a Share of Age 16-61 Population	-0.399	-5.29*	-0.611	-2.98*	-0.987	-2.14*
% Change in Median High School Graduate Wage	0.057	3.90*	0.193	4.93*	0.397	4.64*
Wage Ratio (25-34-Year-Old High School Graduates)						
50th to 25th percentile	0.059	4.14*	0.177	4.62*	0.466	5.46*
25th percentile to Minimum Wage	0.118	14.04*	0.392	16.56*	0.712	13.31*
% Increase in Minimum Wage	0.788	30.89*	0.676	9.80*	0.640	4.12*
Lagged % Increase in Minimum Wage	-0.090	-3.94*	-0.263	-4.24*	-0.529	-3.80*
Intercept	-0.173	-4.07*	-0.464	-4.04*	-0.875	-3.37
Pseudo R-Squared	0.048		0.084		0.137	

*Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel. The sample size for all models is 24,733. A * indicates that a coefficient is statistically significant at the 5% level. If no * is next to a coefficient, then it is statistically insignificant at the 5% level.*

Table 9: 50th Percentile Wage Change Model With Training Interactions

Variable	Model 1 Coeff.	Model 1 t-stat	Model 2 Coeff.	Model 2 t-stat
Firm Training	0.082	4.16*	-0.756	-6.23*
Other Training	0.227	7.83*	-0.450	-2.69*
Firm Training*Lagged % Increase in Minimum Wage	-0.403	-1.71		
Other Training*Lagged % Increase in Minimum Wage	-0.925	-2.85*		
Firm Training*25th Percentile to Minimum Wage			0.607	6.98*
Other Training*25th Percentile to Minimum Wage			0.438	3.73*
Lagged % Increase in Minimum Wage	0.011	0.28	-0.084	-4.04*
Ratio of 25th Percentile to Minimum Wage	0.118	15.88*	0.009	0.61

*Note: The data source is the May 1977-78 and 1979-1998 ORG CPS panel.The model also includes all of the other variables in the models shown in table 5. The sample size for all models is 24,733. A * indicates that a coefficient is statistically significant at the 5% level. If no * is next to a coefficient, then it is statistically insignificant at the 5% level.*